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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,160	07/24/2003	Ying Tong Man	555255012477	9693

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EXAMINER	
ALEMU, EPHREM	

ART UNIT	PAPER NUMBER
2821	

DATE MAILED: 12/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/626,160	MAN ET AL.	
	Examiner	Art Unit	
	Ephrem Alemu	2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims rejected under 35 U.S.C. 102(b) as being anticipated by Hirabayashi (EP 1189304).

Re claims 1, 4, 19 and 24, Hirabayashi discloses a wireless mobile communication device (i.e., a data communication device) (Fig. 4) comprising:

a transceiver (2) incorporating transceiver components (Fig. 4);

an antenna (i.e., antenna 1 including antenna patterns 11, 13) connected to the transceiver (2) (Figs. 4, 8; Col. 5, lines 27-35); and

a floating conductor pad (i.e., ground pattern 14) positioned adjacent the antenna (i.e., antenna 1 including antenna patterns 11, 13) and configured to couple to the antenna to reduce effects of variations in the transceiver components on the antenna (Figs. 4, 8; Col. 8, line 43-Col. 9, line 19).

Re claims 20 and 21, Hirabayashi further discloses a printed circuit board i.e., antenna substrate 8), wherein the floating conductor pad (i.e., ground pattern 14 which is a conductive material) is mounted on the printed circuit board (i.e. main surface 8a of substrate 8).

3. Claims 1, 2, 5, 9-12 and 18 are rejected under 35 U.S.C. 102(a) as being anticipated by Gerraert et al. (EP 1 231 671 A2).

Re claims 1, 2 and 9, Gerraert discloses a floating conductor pad (i.e. floating ground 27) for a wireless communication device (Figs. 1, 2, 10) comprising an antenna (7) and device components (i.e., 29 located on PCB 24) in an operating environment of the antenna (7), the floating conductor pad (i.e., floating ground 27) comprising a patch of conductive material having rectangular shape configured to be positioned adjacent the antenna (i.e., below the antenna 7) to couple to the antenna, whereby the floating conductor pad (i.e., floating ground 27) has a dominant effect on the antenna in the operating environment (Figs. 1, 2, 10; abstract; Col. 3, lines 33-55; Col. 5, line 36- Col. 6, line 16).

Re claim 5, Gerraert discloses the device components (29) comprise a printed circuit board (24), and wherein the floating conductor pad (i.e., floating ground 27) is mounted on the printed circuit board (24) (Figs. 10, 11).

Re claims 10, 11, 12 and 18, Gerraert discloses an antenna for a wireless communication device having a plurality of device components, comprising:

a first and second antenna elements (20, 21) configured to operate in a first and second frequency bands; wherein the first operating frequency band includes both an 1800MHz communication frequency band and a 1900MHz communication frequency band, and wherein the second operating frequency band comprises a 900MHz communication frequency band. (Figs. 4, 6, 7, 8, 9, 10; Col. 5, lines 3-52); and

a floating conductor pad (i.e. patch floating ground 27) positioned adjacent the antenna elements and configured to couple to the antenna elements (i.e., below the antenna elements 20,

21), to thereby reduce effects of variations in the device components on the antenna (Figs. 1, 2, 10; abstract; Col. 3, lines 33-55; Col. 5, line 36- Col. 6, line 16).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 3, 6-8 and 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gerraert et al. (EP 1 231 671 A2) in view of Tran (US 6,215,454).

Re claim 3, although, Gerraert does not disclose the conductive material being selected from the group consisting of: copper and silver, silver and copper are known to be useful in manufacturing antenna elements in the antenna art (see Tran Col. 16, lines 35-60).

It would have been well in the skill of artisan for the conductive material of the floating conductor of Francis to be selected from the group consisting of: copper and silver for the purpose of providing capacitive coupling to the antenna element.

Re claims 6-8, although, Gerraert discloses a printed circuit board 24 and floating conductor pad (i.e. floating ground 27), Gerraert does not mention that the device components comprise plurality of printed circuit boards. However, Gerraert discloses plurality of layers and the floating conductor pad (i.e., floating ground 27) being formed on one of the plurality of layers (i.e. between antenna elements 20, 21 and printed circuit board) over a dielectric-like plastic (28) (Figs. 10, 11; Col. 5, line 36- Col. 7, line 16).

In addition, Tran discloses the dielectric material 716, as in the case for substrate 704, is also manufactured from a dielectric material or substrate, such as a printed circuit board or flexible material known for antenna use (Col. 17, lines 6-13).

It would have been well in the skill of an artisan at the time the invention was made to modify the dielectric-like plastic (28) of Gerraert by a printed circuit board as taught by Tran for no other reason than disposing the floating ground pad (i.e., floating ground) on a second printed circuit board between the antenna elements (20, 21) and the printed circuit board (24) for the purpose of eliminating any effect of the antenna operation arising from the component mounted on the printed circuit board (24). Furthermore, given Gerraert modified by Tran providing components of a keyboard of the wireless communication device for being carried in one of the printed circuit boards and dimensions and orientation of the floating conductor pad being selected so as to cancel noise generated by operation of the keyboard would have been obvious (see Gerraert Col. 4, lines 36-41).

Re claims 13, 14 and 17, although, Gerraert does not disclose the first and second antenna element being located on a substrate, Gerraert discloses locating first and second antenna elements (20, 21) on a non-conductive pad.

Tran discloses that those skilled in the art of electronics and antenna design are very familiar with the various products available from which to manufacture an appropriate antenna substrate, based on desired dielectric properties or antenna bandwidth Characteristics (Col. 8, lines 61-65).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to locate Gerraert's first and second antenna elements 20, 21 on a substrate

as taught by Tran for the purpose of providing a substrate antenna for a mobile communication device. Furthermore, locating the floating conductor pad (i.e., floating ground 27) on the substrate would have been obvious for the purpose of isolating the device components from the antenna elements for effecting antenna operation.

Re claim 15 and 16, Gerraert further discloses the device components (29) comprise a printed circuit board (24), and wherein the floating conductor pad (i.e., floating ground 27) is mounted on the printed circuit board (24) (Figs. 10, 11).

6. Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirabayashi (EP 1 189 304 A2) in view of Gerraert et al. (EP 1 231 671 A2) further in view of Tran (US 6,215,454).

Re claims 22-23, Hirabayashi does not disclose the floating conductor (i.e., ground pattern 14) between the first and the second printed conductor.

Gerraert discloses antenna elements (20, 21), a printed circuit board (24) and a floating conductor pad (i.e. floating ground 27) positioned between the antenna elements and the printed circuit board (24) and the floating conductor pad (i.e., floating ground 27) being formed on one of the plurality of layers (i.e. between antenna elements 20, 21 and printed circuit board) over a dielectric-like plastic (28) (Figs. 10, 11; Col. 5, line 36- Col. 7, line 16).

In addition, Tran discloses the dielectric material 716, as in the case for substrate 704, is also manufactured from a dielectric material or substrate, such as a printed circuit board or flexible material known for antenna use (Col. 17, lines 6-13).

It would have been well in the skill of an artisan at the time the invention was made to modify Hirabayashi with the structure of Gerraert and to further modified the dielectric-like

plastic (28) of Gerraert by a printed circuit board as taught by Tran for no other reason than disposing the floating ground pad (i.e., floating ground) on a second printed circuit board between the antenna elements (20, 21) and the printed circuit board (24) for the purpose of eliminating any effect of the antenna operation arising from the component mounted on the printed circuit board (24). Furthermore, given Gerraert modified by Tran providing components of a keyboard of the wireless communication device for being carried in one of the printed circuit boards and dimensions and orientation of the floating conductor pad being selected so as to cancel noise generated by operation of the keyboard would have been obvious (see Gerraert Col. 4, lines 36-41).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Troelsen (US 6,646,610); Tay et al. (US 6,348,895); and Taniguchi et al. (US 5,831,580); also teach similar inventive subject matter.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ephrem Alemu whose telephone number is (571) 272-1818. The examiner can normally be reached on M-F Flex hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don K Wong can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EA
11-23-04

TUYET VO
PRIMARY EXAMINER